

REMARKS:

This reply encompasses a bona fide attempt to overcome the rejections raised by the Examiner and the reasons why the Applicant believes that the rejections should be
5 withdrawn.

35 USC §103(a) Claim rejections

In the Claims rejections, the Examiner rejects Claims 1 – 25 as being unpatentable over Frohardt et al (US 4,830,504) and Wulf et al (US 5,028,800), taken together, in view of
10 Piwonka-Corle et al (US 5,910,842).

The examiner references Frohardt et al and argues that it is known in the art to measure the output of a light source to allow for compensation for beam intensity drift or the like, and to measure a reference and a sample in the same position. In that context, the Applicant
15 respectfully holds that what is claimed is a simultaneous compensation of light source drift and light detector drift. To the contrary, in Frohardt et al the light source (25) is independently adjusted via the beamsplitter (58) and an additional sensor (56). Also an additional and separate beam path (60) is introduced for that purpose, which is not part of the measurement beam path. Drift of the sensor (56) remains undetected and may contribute
20 to a misadjustment of the light source (25) and may result in inaccurate measurements of the apparatus as may be well appreciated by anybody skilled in the art. The use of the calibration standard (44) cannot be utilized in combination with the sensor (56) to adjust drift in the sensor (56). In addition, drift adjustment of the sensor (30) is not possible while keeping the test sample in position. The entire apparatus needs to be moved away
25 from test sample in order to bring the calibration standard (44) into calibration position and to perform a calibration of the sensor (30). In summary, the use of a separate sensor (50), which may not be calibrated by use of the calibration standard (44) and inability of the

apparatus to calibrate the sensor (30) during an operational measurement of a test sample make Frohardt et al materially different from the Applicant's invention. The shortcomings of Frohardt et al may be clearly solved by the Applicant's invention where drift in light source and light detector are simultaneously compensated without removing the test sample
5 from its test position. Hence, the Applicants hold that Frohardt et al in itself clearly supports non-obviousness of the Applicant's invention. The Applicant has accordingly amended the independent Claims 1 and 8.

Regarding the Examiner's reference to Piwonka-Corle et al the Applicant holds, that the
10 reference beam taught in Piwonka-Corle et al is introduced for the purpose of improved thin film measurements only. Nothing in Piwonka-Corle teaches simultaneous calibration of light source and light detector by use of established relation between response beam and a reference beam.

15 The Examiner references Wulf et al to argue that a measure of the light source intensity may be knowingly obtained in other manners than shown by Frohardt et al. In that context the Applicant holds that Wulf et al is in so far materially different from the Applicant's invention as Wulf's chopper is a permanently placed element to provide a frequent and predetermined switching between the test beam and the reference beam. Neither operational
20 calibration parameters are taken into account nor is the chopper placed only temporarily during the calibration. The permanent presence of the rotating chopper represents an optical element that is crossed by the incident beam and by the reflected measurement beam and may degrade the measurement quality as is well-known in the art. The Applicant has accordingly amended the Claims 1 and 8. A combination of Wulf et al and Frohardt et al
25 would not render an apparatus that would provide for a temporary placement of a reference sample at the beam crossing that is initiated in conjunction with operational calibration parameters.

Further, the Examiner states that it would have also been obvious to provide a reference in the place of the sample of Wulf et al in the manner taught by Frohardt et al. Again, this combination of Wulf et al and Frohardt et al would not render an apparatus as claimed in
5 the application.

Finally, the Examiner cites Wulf's and Piwonka's teaching of used curved mirrors to focus and direct the light. This combination of Wulf et al, Frohardt et al and Piwonka-Corle would not render an apparatus as claimed in the application.

10

In summary, in view of the above, the Applicant respectfully disagrees with the Examiner's rejection and believes that amended Claims **1** and **8** are unobvious.

In Conclusion

Since the Applicant has overcome all grounds of rejection, the Applicant respectfully requests the application being reconsidered by the Examiner and the allowable subject
5 matter pointed out in the next Office Action.

Respectfully submitted,



Dr. Ron Jacobs

10 Reg. No. 50,142

Lumen Intellectual Property Services

45 Cabot Avenue, Suite 110

Santa Clara, CA 95051-6670

15 (408) 260-7300 x18

Please amend Claim 1 with the following marked-up version.

1. (*Once Amended*) A method for simultaneously compensating a source drift of a light source and a detector drift of a light detector, said method comprising:

- a) providing a first beam path with a crossing for a probe beam traveling from said light source to said light detector along a test location;
- b) providing a second beam path from said [test location] light source to said light detector along said crossing and not along said test location [such that said second beam path crosses said first beam path at a beam crossing];
- c) positioning at said test location a calibration sample for sending a known response beam along said [second] first beam path to said light detector in response to said probe beam;
- d) calibrating said light source and said light detector using said known response beam;
- e) temporarily placing a reference sample at said beam crossing for sending a reference beam along said second beam path to said light detector in response to said probe beam;
- f) establishing a relation between said known response beam and said reference beam;
- g) defining a group of operational calibration parameters including a set time period, drift of said light source or drift of said light detector;
- h) positioning at said test location a test sample and testing said test sample;
- i) interrupting said testing in conjunction with said operational calibration parameters and temporarily placing said reference sample at said beam crossing for simultaneously compensating said source drift and said detector drift using said [reference beam] established relation while said test sample remains in position.

Please amend Claim 8 with the following marked-up version.

.8. (*Once Amended*) A system for simultaneously compensating a source drift of a light source and a detector drift of a light detector, said system comprising:

a) a test location;

b) a first beam path from said light source to said light detector along said test location;

[c) a second beam path from said test location to said light detector;]

c) a beam crossing [between] along said first beam path [and said second beam path;]

d) a second beam path from said light source to said light detector along said beam crossing and not along said test location, said second beam path being substantially part of said first beam path;

e) a calibration sample for positioning at said test location and for sending a known response beam along said second beam path to said light detector in response to said probe beam;

f) a first control unit for calibrating said light source and said light detector using said known response beam;

g) a reference sample for placing at said beam crossing for sending a reference beam along said second beam path to said light detector in response to said probe beam, wherein said reference sample is configured for being placed in response to at least one of a group of operational calibration parameters including a set time period, drift of said light source or drift of said light detector; and

h) a second control unit for simultaneously compensating said source drift and said detector drift using [said reference beam] a established relation between said known response beam and said reference beam.